

TABLE VII.—Heights of rivers referred to zeros of gages.—Continued.

Table with columns for Stations, Distance to mouth of river, Danger line on gage, Highest water (Height, Date), Lowest water (Height, Date), Mean stage, Monthly range, and Stations, Distance to mouth of river, Danger line on gage, Highest water (Height, Date), Lowest water (Height, Date), Mean stage, Monthly range. Includes rivers like Neches, Trinity, Colorado, Red River, Columbia, Willamette, and Sacramento.

1 Record incomplete. 2 Frozen 1 day. 3 Frozen 6 days. 4 29 days only. 5 26 days only. 6 Frozen 8 days. 7 No record.

HAWAIIAN CLIMATOLOGICAL DATA.

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Rainfall data for April, 1904.

Table with columns for Stations, Elevation, Amount, Stations, Elevation, Amount. Lists stations across Hawaii including Lanai, Oahu, Maui, and Kauai with their respective elevations and rainfall amounts.

Meteorological Observations at Honolulu, April, 1904.

The station is at 21° 18' north, 157° 50' west. It is the Hawaiian Weather Bureau station Punahou. (See fig. 2, No. 1, in the MONTHLY WEATHER REVIEW for July, 1902, page 365.) Hawaiian standard time is 10h 30m slow of Greenwich time. Honolulu local mean time is 10h 31m slow of Greenwich.

The pressure is corrected for temperature and reduced to sea level, and the gravity correction, -0.06, has been applied.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 12, or Beaufort scale. Two directions of wind, or values of wind force, or amounts of cloudiness, connected by a dash, indicate change from one to the other.

Rainfall for twenty-four hours is measured at 9 a. m. local, or 7:31 p. m., Greenwich time. The rain gage, 8 inches in diameter, is 1 foot above ground. Thermometer, 9 feet above ground. Ground is 43 feet and the barometer 50 feet above sea level.

Table with columns for Date, Pressure at sea level, Temperature (Dry bulb, Wet bulb), Temperature (Maximum, Minimum), Means (Dew-point, Relative humidity), Wind (Prevailing direction, Force), Average cloudiness, Sea-level pressures (Maximum, Minimum), Total rainfall at 9 a. m., local time. Includes daily data for April 1904 and summary statistics.

Mean temperature for the month of April, 1904 (6 + 2 + 9) + 3 = 72.5°; normal is 72.5°. Mean pressure for the month of April, 1904, (9 + 3) + 2 = 30.013; normal is 30.029.

* This pressure is as recorded at 1 p. m., Greenwich time. † These temperatures are observed at 6 a. m., local, or 4:31 p. m., Greenwich time. ‡ These values are the means of (6 + 9 + 2 + 9) + 4. § Beaufort scale.

Maximum thermometer set at 9 p. m. and minimum at 2 p. m., local time.

GENERAL SUMMARY FOR APRIL, 1904.

The meteorological summary for April is as follows: Honolulu.—Temperature mean for the month, 72.5°; normal, 72.5°; average daily maximum, 77.2°; average daily minimum, 68.7°; mean daily range, 8.5°; greatest daily range, 14°

NOTE.—The letters n, s, e, w, and c show the exposure of the station relative to the winds.

(13th); least daily range, 5° (1st); highest temperature, 80° (6th); lowest temperature, 63° (13th).

Barometer average, 30.013; normal, 30.029; highest, 30.12 (20th); lowest, 29.85 (8th); greatest 24-hour change, that is from any given hour of one day to the same hour on the next, .11 (3 p. m. 8th to 3 p. m. 9th); lows passed this point 4th, 7th, and 8th; highs, 10th, 11th, and 17th to 30th, inclusive.

Relative humidity average, 72.6 per cent; normal, 73.0 per cent; mean dew-point, 62.5°; normal, 63.3°; mean absolute moisture, 6.22 grains per cubic foot; normal, 6.42 grains.

Rainfall, 3.03 inches; normal, 2.90 inches; greatest rainfall in twenty-four hours, 1.12 inches (from 9 a. m. 19th to 9 a. m. 20th); rain record days, 26; normal, 17. The total precipitation from January 1 to May 1 was 40.81 inches; the normal yearly rainfall is 37.58 inches, or 3.23 inches less than the fall for the first four months of this year.

The artesian well water level rose from 35.85 to 36.30 feet above mean sea level. These are the highest figures reached since observations began in March, 1899. April 30, 1903, it stood at 34.75. The average daily mean sea level was 9.79, the assumed annual mean being 10 feet above datum. For April, 1903, it was 9.65.

Trade wind days, 27; normal, 20; average force of wind, Beaufort scale and during daylight, 2.2; average cloudiness, tenths of sky, 4.8; normal, 5.1.

Approximate percentages of district rainfall as compared with normal: Hawaii, Hilo district, 259 per cent; Hamakua, 360; Kohala, 356; Waimea, 235; Kona, 330; Kau, 256; Puna, 159; Island of Maui, variable, from 22 per cent at Wailuku to 262 per cent at Haleakala Ranch; Oahu, Honolulu district, 92 per cent; Nuuanu, 119; Koolau, 116; Ewa, 61; Island of Kauai, 167 per cent.

The heaviest monthly rainfall was at Oloa (20-mile station), 61.01 inches. The heaviest 24-hour rainfalls were at Honokaa, 8.40 inches (11th); Oloa (20 miles), 7.26 (13th), and Kaumana, 6.68 (10th), all on Hawaii.

Ewa Mill, dew-point, 61.0°; relative humidity, 69.0 per cent; barometer average, 30.00 inches.

Kohala, dew-point, 64.5°; relative humidity, 82.7 per cent.

United States Magnetic Station, dew-point, 63.5°; relative humidity, 71.0 per cent.

Honolulu, dew 6 mornings; slight earthquake 4th at 7:39 a. m.; also reported from Hawaii and Maui.

Temperature table for April, 1904.

| Stations. | Elevation. | Mean max. | Mean min. | Cor. av'ge. | Highest. | Lowest. |
|--|--------------|-----------|-----------|-------------|----------|---------|
| | <i>Feet.</i> | ° | ° | ° | ° | ° |
| Hilo | 50 | 81.1 | 65.7 | 72.7 | 89 | 63 |
| Pepeekeo | 100 | 75.3 | 68.1 | 71.0 | 82 | 66 |
| Oloa Mill | 210 | 82.6 | 63.3 | 73.3 | 89 | 58 |
| Kohala | 521 | 75.2 | 65.4 | 69.6 | 81 | 62 |
| Waimea | 2,730 | 68.5 | 58.5 | 62.9 | 76 | 56 |
| Volcano House | 4,000 | 68.2 | 52.2 | 59.5 | 75 | 48 |
| Waiakea | 2,700 | 82.0 | 56.9 | 68.8 | 91 | 51 |
| Keonuku | 10 | 80.1 | 73.0 | 75.4 | 89 | 69 |
| Kinaiu Street (Castle) | 50 | 78.5 | 69.4 | 72.9 | 82 | 61 |
| United States Magnetic Station | 50 | 80.5 | 66.4 | 72.8 | 84 | 61 |
| Ewa Mill | 60 | 78.4 | 65.6 | 71.3 | 81 | 60 |
| United States Experiment Station | 350 | 78.7 | 67.4 | 72.3 | 83 | 64 |

Reported from other stations: Kohala, Hawaii, heaviest April rainfall in twenty-years, 16.49 inches falling; the normal April rainfall for this station is 4.89 inches; earthquake at 7:40 a. m., 4th; trade-wind days 25, balance of month northerly. Hilo, earthquake 7:35 a. m. 4th and 10:55 p. m. 30th. Pepeekeo, earthquake 4th at 7:35 a. m. and heavy shock at 10:15 p. m. 29th; heavy surf 8th to 13th and 16th to 29th, inclusive; winds mostly east-northeast, average force 2.4; average cloudiness 8.2. Waimea, strong northeast winds prevailed with gale on 20th and 21st.

NOTE.—The March summary gave the heaviest monthly rainfall as 19.97 inches at Maunawili, Oahu; a delayed report from Hanalei, Kauai, gives a fall of 21.90 inches, which was the heaviest for March.